

REMARKS/ARGUMENTS

Favorable reconsideration of this application in view of the above amendments and in light of the following discussion is respectfully requested.

Claims 14-31 are pending. Claims 14-24 and 26 are amended and Claims 27-31 are newly submitted. No new matter is introduced.¹

In the Office Action, Claims 14, 16, and 24 were rejected under 35 U.S.C. § 112, second paragraph as indefinite. In addition, Claims 14, 15, 18-20, and 24-26 were rejected under 35 U.S.C. § 102(b) as anticipated by Lamers (U.S. Patent No. 5,527,226); Claims 16 and 17 were rejected under 35 U.S.C. § 103(a) as unpatentable over Lamers in view of Gieles (U.S. Patent No. 7,241,238); Claims 21-23 were rejected under 35 U.S.C. § 103(a) as unpatentable over Lamers in view of Swanson (U.S. Patent No. 5,269,726); and Claims 14, 15, 18-20, and 24-26 under 35 U.S.C. § 103(a) as unpatentable over Friedmann (U.S. Patent No. 5,295,915) in view of Ehrlich (U.S. Patent No. 6,336,878).

In rejecting Claim 14 as indefinite, the Office Action asserts that “it is not clear as to the placement of the oil passage.”² Amended Claim 1 recites a belt type continuously variable transmission that includes a pulley shaft that is supported by a first bearing and a second bearing that are spaced apart from each other in an axial direction of the pulley shaft. A radial direction oil passage extends in the pulley shaft in a radial direction of the pulley shaft. Amended Claim 1 clarifies that the radial direction oil passage is formed in the pulley

¹ Support for the amended and newly submitted claims can be found in the claims as originally filed and at least at page 8, paragraph [0032] to page 9, paragraph [0035], and page 10, paragraph [0040] to page 11, paragraph [0042], for example.

² See the outstanding Office Action at page 2, lines 10-14.

shaft *outside of* a portion of the pulley shaft that is *between* the first bearing and the second bearing *with respect to the axial direction of the pulley shaft*.

The Office Action further asserts that “in the figures it [the claimed oil passage] appears to be located between the bearings and yet claimed to be ‘on an outside of an area between the two positions ... which the bearings are provided.’”³ Applicants respectfully disagree with this interpretation of the figures of the present application and note that the claimed location of the radial direction oil passage finds support throughout Applicants’ disclosure as originally filed. For example, Figure 2 of the present application illustrates a radial direction oil passage SPB that is formed in a pulley shaft SP *outside of* a portion of the pulley shaft SP that is *between* a first bearing 32 and a second bearing 31 *with respect to the axial direction of the pulley shaft*.⁴ As another example, Figure 3 of the present application illustrates a radial direction oil passage SSB that is formed in a pulley shaft SS *outside of* a portion of the pulley shaft SS that is *between* a first bearing 33 and a second bearing 34 *with respect to the axial direction of the pulley shaft*.⁵ Although these figures illustrate examples of the claimed belt type continuously variable transmission and provide support for the claimed subject matter, the claimed subject matter is not limited to the examples shown in the figures.

Furthermore, Applicants’ specification not only provides support for the structure of the claimed configuration, but also details the purposes and advantages of the claimed configuration. For example, page 2, paragraphs [0005] to [0007] explain that with the

³ See the Office Action at page 2, lines 10-14.

⁴ See Applicants’ specification as originally filed at page 8, paragraphs [0032]-[0033].

⁵ See Applicants’ specification as originally filed at page 10, paragraph [0040] to page 11, paragraph [0041].

claimed configuration, a portion of a pulley shaft in which the radial direction oil passage is formed does not directly receive a load applied by a belt. Therefore, stress is not concentrated on the radial direction oil passage and the strength of the pulley shaft can be ensured.

Moreover paragraphs [0047] to [0049] of Applicants' specification compares the conventional configuration in which a radial direction oil passage is formed in an area of the pulley shaft *between* two positions at which a pair of bearings are provided with respect to an axial direction of a pulley shaft (Figure 4A) and the claimed configuration in which a radial direction oil passage is formed in the pulley shaft *outside of* a portion of the pulley shaft that is *between* the first bearing and the second bearing *with respect to the axial direction of the pulley shaft*. Applicants recognized that in the conventional configuration, large bending occurs at the position at which the oil passage is placed, whereas bending hardly occurred at the position at which the oil passage is placed in the claimed configuration. Thus, Applicants noted at paragraph [0049] of the specification as originally filed that the claimed configuration may result in greater pulley strength due to a reduction in stress concentration at the oil passage.

Accordingly, amended Claim 14 is believed to be definite, clear, and is supported by the disclosure as originally filed. It is respectfully requested that the rejection of Claim 14 under 35 U.S.C. § 112, second paragraph be withdrawn.

With respect to Claim 16, the Office Action asserts that "the oil passage is claimed as being 'located on an outer side of a spline portion formed in the pulley shaft', yet is depicted

in the drawing as running from the center of the pulley shaft outward in a radially direction.”⁶

Amended Claim 16 clarifies that the radial direction oil passage is formed in the pulley shaft outside of a portion of the pulley shaft that includes a spline portion *with respect to the axial direction of the pulley shaft*. The claimed location of the radial direction oil passage finds support throughout Applicants’ disclosure as originally filed. For example, Figure 2 of the present application illustrates a radial direction oil passage SPB that is formed in a pulley shaft SP *outside of* a portion of the pulley shaft SP that includes a spline portion 38S *with respect to the axial direction of the pulley shaft*.⁷ As another example, Figure 3 of the present application illustrates a radial direction oil passage SSB that is formed in a pulley shaft SP *outside of* a portion of the pulley shaft SP that includes a spline portion 43S *with respect to the axial direction of the pulley shaft*.⁸ Although these figures illustrate examples of the claimed belt type continuously variable transmission and provide support for the claimed subject matter, the claimed subject matter is not limited to the examples shown in the figures.

Accordingly, amended Claim 16 is believed to be definite, clear, and is supported by the disclosure as originally filed. It is respectfully requested that the rejection of Claim 16 under 35 U.S.C. § 112, second paragraph be withdrawn.

With respect to Claim 24, the Office Action asserts that “[i]t is not clear how the load can be only partially transmitted to the bearings, and not at least be partially transmitted to the pulley shaft as well.”⁹ Amended Claim 24 clarifies that the movable sheave is attached to the pulley shaft and is radially supported on the cylinder member in such a way that a load

⁶ See the outstanding Office Action at page 2, lines 15-17.

⁷ See Applicants’ specification as originally filed at page 9, paragraphs [0034]-[0035].

⁸ See Applicants’ specification as originally filed at page 11, paragraph [0042].

⁹ See the Office Action at page 2, lines 18-22.

applied by a belt on the movable sheave *is not directly applied to a portion of the pulley shaft in which the radial oil passage extends*. This amendment finds support at least at page 13, paragraph [0047] of the specification as originally filed, for example. Accordingly, amended Claim 24 is believed to be definite and clear. It is respectfully requested that the rejection of Claim 24 under 35 U.S.C. § 112, second paragraph be withdrawn.

None of the cited references, either alone or in combination, disclose or suggest the claimed configuration in which the radial direction oil passage is formed in a pulley shaft *outside of* a portion of the pulley shaft that is *between* a first bearing and a second bearing *with respect to the axial direction of the pulley shaft*.

Figure 1 of Lamer illustrates a continuously variable transmission that includes a primary pulley shaft 2 that is supported by a pair of bearings 26 and 27, and that includes a secondary pulley shaft 6 that is supported by a pair of bearings 28 and 29.¹⁰ Lamer describes that the primary pulley shaft 2 includes passages 15 and 16, and that the secondary pulley shaft 6 includes a passage 15'.¹¹ However, as can be seen in Figure 1 of Lamer, the passages 15 and 16 are located in a portion of the primary pulley shaft 2 that is *between* the bearings 26 and 27 with respect to the axial direction of the primary pulley shaft 2. Likewise, the passage 15' is located in the secondary pulley shaft 6 *between* the bearings 28 and 29 with respect to an axial direction of the secondary pulley shaft 6. Passages that are located *between* a pair of bearings with respect to an axial direction of a pulley shaft are not a radial direction oil passage that is formed in a pulley shaft *outside of* a portion of the pulley shaft

¹⁰ See Lamer at column 2, lines 45-56.

¹¹ See Lamer at column 2, lines 26-44.

that is between a first bearing and a second bearing *with respect to the axial direction of the pulley shaft*.

Accordingly, Lamer fails to disclose or suggest the features of independent Claim 14. It is respectfully requested that the rejection of Claim 14 and Claims 15, 18-20, and 24-26 depending therefrom based on Lamer be withdrawn.

With respect to the rejection of dependent Claims 16 and 17 under 35 U.S.C. § 103(a) as unpatentable over Lamers in view of Gieles, Gieles fails to cure the deficiencies in Lamers discussed above with respect to independent Claim 14. Gieles describes a continuously variable belt contact transmission 10 that includes a drive shaft 14 that is mounted into a transmission housing, but does not describe how the drive shaft 14 is supported.¹² Therefore, Gieles does not suggest a radial direction oil passage that is formed in a pulley shaft *outside of* a portion of the pulley shaft that is between a first bearing and a second bearing *with respect to the axial direction of the pulley shaft*, because Gieles does not even describe the claimed first and second bearings. Accordingly, Claims 16 and 17 are believed to be in condition for allowance for at least the same reasons as Claim 14 from which they depend.

With respect to the rejection of dependent Claims 21-23 under 35 U.S.C. § 103(a) as unpatentable over Lamers in view of Swanson, Swanson fails to cure the deficiencies in Lamers discussed above with respect to independent Claim 14. Instead, much like Lamers, Figure 1 of Swanson illustrates a pair of pulley shafts that include passages that are located in portion of the respective pulley shaft that is *between* a pair of bearings which support the respective pulley shaft with respect to an axial direction of the respective pulley shaft.

¹² See Gieles, at column 2, lines 20-23.

Accordingly, Claims 21-23 are believed to be in condition for allowance for at least the same reasons as Claim 14 from which they depend.

The combination of Friedman and Ehrlich also fails to disclose or suggest a radial direction oil passage that is formed in a pulley shaft *outside of* a portion of the pulley shaft that is between a first bearing and a second bearing *with respect to the axial direction of the pulley shaft*.

Figure 1 of Ehrlich illustrates an input shaft 10 that carries an adjustable pulley.¹³ A bearing 28 rotatably journals the input shaft 10 in a housing or case of a transmission.¹⁴ Ehrlich describes that the input shaft 10 receives torque from a primary mover by way of a driver gear 48 which is rotatably mounted on the shaft 10.¹⁵ Ehrlich further describes that the input shaft 10 includes a bore 42 that communicates with a chamber 34 by way of at least one radially extending bore in the shaft 10, and a bore 44 in the shaft 10 that communicates with a chamber 36 by way of one or more radially extending channels in the shaft 10.¹⁶

However, even assuming *arguendo* that the bearing 28 and the driver gear 48 are identified as the claimed first and second bearings and the radially extending bores in the shaft 10 are identified as the claimed radial direction oil passage, the radially extending bores in the shaft 10 are located in a portion of the shaft 10 that is *between* the gear 48 and the bearing 29, and not outside of a portion of the shaft 10 that is between a first bearing and a second bearing *with respect to the axial direction of the pulley shaft*.

¹³ See Ehrlich, at column 8, lines 16-27.

¹⁴ See Ehrlich, at column 9, lines 7-11.

¹⁵ See Ehrlich, at column 9, lines 46-51.

¹⁶ See Ehrlich, at column 9, lines 31-45.

Friedmann fails to cure the deficiency in Ehrlich. Figure 2 of Friedmann illustrates a shaft I that includes a radial passage 123. However, Ehrlich fails to describe or suggest how the radial passage 123 is positioned on the shaft I relative to any structure that could be reasonably interpreted as the claimed first bearing and second bearing that are spaced apart from each other in an axial direction of the pulley shaft, much less that the radial passage 123 suggest the claimed radial direction oil passage that is formed in a pulley shaft *outside of* a portion of the pulley shaft that is between a first bearing and a second bearing *with respect to the axial direction of the pulley shaft*.

Accordingly, even the combined teaching of Friedmann and Ehrlich fail to disclose or suggest the features of independent Claim 14. It is submitted that Claim 14 and the claims depending therefrom are in condition for allowance.

New Claims 27-31 depend from Claim 14 and recite additional features that are not disclosed or rendered obvious by the cited references. As discussed in detail above, it is respectfully submitted that Claim 14 is allowable, and therefore Claims 27-31 are also allowable for at least the same reasons as Claim 14.

For the reasons discussed above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance for Claims 14-31 is earnestly solicited.

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Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicants' undersigned representative at the below listed telephone number.

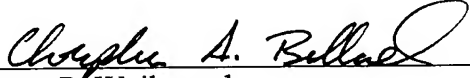
Respectfully submitted,

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